



## NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Division of Waste Management

Pat McCrory  
Governor

John E. Skvarla, III  
Secretary

### Solid Waste Section

December 09, 2014

Mr. Simon Lobdell, P.E.  
Department of Water Management, City of Durham  
1600 Mist Lake Drive  
Durham, NC 27704

Subject: Approval for Conducting Expansion of the Existing Landfill Gas Collection and Control System  
City of Durham Landfill, Durham County, North Carolina  
Permit No. 3201-MSWLF-1979, Document ID No. (Doc ID) 22448

Dear Mr. Lobdell:

On December 5, 2010, the Division of Waste Management (DWM), Solid Waste Section (SWS) received the following letter proposal (Proposal) submitted on behalf of the City of Durham and Methane Power/Biogas Energy Solutions (BES) by Smith Gardner Inc. in Raleigh, North Carolina:

- “*Authorization Request for GCCS Expansion Project, City of Durham Landfill (NC Solid Waste Permit No. 32-01)*” dated December 4, 2014. The submittal includes the letter work plan and a set of figure - a total of seven drawings (Doc ID 22434).

According to the above-referenced Proposal, the City of Durham and Methane Power/BES requested the SWS approval to:

- a) Recommence the project of expanding the existing gas well-field at the closed Durham Sanitary Landfill which was originally approved on December 10, 2010 (DIN 12510).
- b) Modify the work plan (DIN 11604) previously approved in December 2010 by installing sixteen (16) additional gas extraction wells – GW1 through GW-16 and valves, replacing/re-drilling the existing extraction well EW-22 , and constructing approximately 2,850 linear-feet lateral/header piping. Upon completion of the expansion project, the new wells, piping, and apparatus will be connected to the existing on-site landfill gas collection and control system (LFGCCs) and the landfill gas-to-energy system (LFGTE).

After completing the review of the above-referenced Proposal, the SWS hereby approves your request for the LFGCCs expansion project. The electronic format of the approved documents can be directly downloaded from the DWM’s web site at <https://edm.nc.gov/DENR-Portal/>. Type in the Doc ID Number (only numeric number) in the boxed area next to the “**Description**” in the “**Property Criteria**” area. Then click “**Search**” box. The

document in “pdf” format will appear on the lower section of the screen called “**Content**” area. Please place the approval documents to the operating records at the landfill facility.

Please note that this authorization for the LFGCCs expansion project does not remove any responsibilities that the City of Durham, the owner and operator of the above-referenced landfill property as defined in NCGS 130A-290(a)(21), may have to comply with any permit condition, or any local, state or federal regulation.

To initiate construction activities at the landfill, the City of Durham agrees to accept and implement following actions, in addition to the tasks described in the approved Proposal (DIN 22434):

- i. In order to address potential nuisances, such as odors and vectors and to keep dry trench condition, the pipe trench shall not be left open more than 200 feet in advance of pipe installation and trench backfill so there is no exposed waste and open trench at the conclusion of each working day. The excavated wastes generated either from well installation or trench excavation must be removed from the working areas and disposed either at a permitted solid waste management facility or on-site cover containers which later will be transported to a permitted solid waste management facility.
- ii. During the course of installing piping and backfilling trench, the disturbed clay liner, a component of the Type 2 final cover system shall be restored to have a minimum permeability (hydraulic conductivity) of less than or equal to  $1 \times 10^{-5}$  cm/sec, which shall be tested and confirmed by testing method - ASTM D 5084 (at a confining pressure simulated to the final cover loading condition, maximum confining pressure of 5 psi and maximum hydraulic gradient of 15) at a frequency of one test per lift. The restored clay liner must also be tested at the frequency of once per every 300 feet by ASTM D 6938 or equivalent methods to demonstrate the in-place densities of at least 90 percent of the maximum of the density as determined by the method - ASTM D698. Should the results from the first four consecutive tests meet or exceed the above-specified density criterion, then the testing frequency can be adjusted to once every 500 feet. If a test fails to achieve the density criterion, the testing frequency must return to the original request of one test every 300 linear feet.
- iii. During the course of installing piping and backfilling trench in the Type 1 final cover areas, the visual monitoring for compaction efforts and confirmation are required.
- iv. The Asbestos Work Plan that approved by the NC DHHS/ Division of Public Health must be implemented for this project.
- v. The Erosion and Sediment Control Plan and/or its amendment that approved by the NC Land Quality Section or the City of Durham must be executed to protect the surface water quality and prevent soil from erosion in the course of construction.

Upon completion of the construction of LFGCCs project, the SWS may approve the City of Durham to operate the constructed systems. The authorization for operation will be issued pending receipt and approval of the following documents and fee:

- i. The Construction Record Report according to the approved Proposal (DIN 22434) including, but not limited to, the narratives to describe the expansion projects, the certification prepared, signed, and sealed by a Professional Engineer registered in the State of North Carolina, material testing results, supporting document for all work and repairs to the landfill cover system, representative photographs, gas well

completion logs, as-built drawings of the components of the LFGCCs – wells (including final well scheme as shown on Sheet No. 5/Drawing No. D2 [DIN 22434]), valves, leachate/condensate sumps, and/or piping/header alignments. As-built drawings shall be prepared by a surveyor registered in the State of Carolina.

- ii. The revised cost estimates for post-closure cares for the above-referenced landfill including costs to decommissioning the LFGCCs and LFGTE system.
- iii. Approval documents - the asbestos work plan and erosion and sediment control plan issued by the state or local government agencies.
- iv. The statutorily required permit modification fee of \$1,500.00 dollars.

If you should have any questions about this authorization, please contact me at 919-707-8251 or [ming.chao@ncdenr.gov](mailto:ming.chao@ncdenr.gov).

Sincerely,



Ming-Tai Chao, P.E.  
Environmental Engineer  
Division of Waste Management, NCDENR

cc:

Stacey Smith, P.E., Smith Gardner, Inc.  
Ed Mussler, Permitting Branch Supervisor  
John Patrone, DWM  
Dennis Shackelford, DWM  
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